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**Italy—stratigraphy**
*Cretaceous:* Late Mesozoic and Cenozoic movements of the Italian Peninsula; further paleomagnetic data from the Umbrian Sequence
(Vandenberg, J., *et al.*) 1: 133-150

**Italy—structural geology**
*structural analysis:* Structure and petrology of the Lanzo peridotite massif (Piedmont Alps)
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**Italy—tectonophysics**
*plate tectonics:* Late Mesozoic and Cenozoic movements of the Italian Peninsula; further paleomagnetic data from the Umbrian Sequence
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**Japan—engineering geology**
*shorelines:* A model of the development of continental shelves having erosional origin
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*changes of level:* A model of the development of continental shelves having erosional origin
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*erosion features:* A model of the development of continental shelves having erosional origin
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**Japan—oceanography**
*continental shelf:* A model of the development of continental shelves having erosional origin
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**Japan—seismology**
*earthquakes:* Fault mechanism and recurrence time of major earthquakes in southern Kanto District, Japan, as deduced from coastal terrace data
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**Japan—structural geology**
*neotectonics:* Fault mechanism and recurrence time of major earthquakes in southern Kanto District, Japan, as deduced from coastal terrace data
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**Kentucky—sedimentary petrology**
*sedimentary rocks:* Subaerial crusts, caliche profiles, and breccia horizons; comparison of some Holocene and Mississippian exposure surfaces, Barbados and Kentucky
(Harrison, R. S., *et al.*) 3: 385-396

**Kentucky—stratigraphy**
*Ordovician:* Late Middle and early Late Ordovician history of the Cincinnati Arch Province, central Kentucky to central Tennessee
(Borella, P. E., *et al.*) 10: 1559-1573

**lakes** *see under* environment *under* sedimentation; *see under* lacustrine features *under* geomorphology

**landform description** *see under* geomorphology

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**lava** *see also* igneous rocks; magmas

**lava—flow mechanism**
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(Feininger, T.) 4: 494-503
*subaqueous environment:* Silicic lavas in Paleozoic flyschlike deposits in New South Wales, Australia; behavior of deep subaqueous silicic flows
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**lava—genesis**
*pillow lava:* Deep-sea origin of Ordovician pillow basalt and associated sedimentary rocks, northern Nevada
(Wrucke, C. T., *et al.*) 8: 1272-1280

**lava—geochemistry**
*evolution:* Petrologic evolution of the San Juan volcanic field, southwestern Colorado; Pb and Sr isotope evidence
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*major elements:* Time-space relationships between late Quaternary rhyolitic and andesitic volcanism in the southern Taupo volcanic zone, New Zealand
(Kohn, B. P., *et al.*) 8: 1265-1271

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*pillow lava:* Volcanic structure of the crest of the Puna Ridge, Hawaii; geophysical implications of submarine volcanic terrain
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**lava—petrology**
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*lava fields:* Tertiary volcanism and caldera development near Durango City, Sierra Madre Occidental, Mexico
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*textures:* Nucleation and growth of plagioclase, Makaopui and Alae lava lakes, Kilauea Volcano, Hawaii
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**lava—structure**
*columnar joints:* Cyclic fracture mechanisms in cooling basalt
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**Libya—petrology**
*intrusions:* Geology, geochemistry, and tectonic setting of the Ben Ghnema Batholith, Tibesti Massif, southern Libya
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**limestone** *see also under* carbonate rocks *under* sedimentary rocks

**lineation** *see also* foliation; structural analysis

**lineation—interpretation**
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**magmas—differentiation**
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*fractional crystallization:* Geology, petrology, and geochemistry of Isla Tortuga, a recently formed tholeiitic island in the Gulf of California
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*layered intrusions:* Textural and structural modification history in the Red Hill layered syenitic complex, New Hampshire
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*plutons:* Petrology and regional significance of the Roxboro Metagranite, North Carolina
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*stocks:* Little Chief Granite porphyry; feldspar crystallization history
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*changes:* Interpretation of olivine zoning; study of a maar from the San Francisco volcanic field, Arizona
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*rhyolitic composition:* Time-space relationships between late Quaternary rhyolitic and andesitic volcanism in the southern Taupo volcanic zone, New Zealand
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**magnesium—abundance**
*ice:* The composition of basal ice from a glacier sliding over limestones
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**marine geology** *see also under* oceanography *under* Atlantic Ocean
**Mars—geomorphology**
*landslides:* A large landslide on Mars
(Lucchitta, B. K.) 11: 1601-1609
**Maryland—sedimentary petrology**
*sedimentary structures:* Load structures at the sediment-saprolite boundary, Fall Line, Maryland
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**Massachusetts—oceanography**
*sedimentation:* Erosion of fine-grained marine sediments; sea-floor and laboratory experiments
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*pteridophytes:* A late Middle Pennsylvanian flora of the Narragansett Basin, Massachusetts
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**Massachusetts—stratigraphy**
*Pennsylvanian:* A late Middle Pennsylvanian flora of the Narragansett Basin, Massachusetts
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**Mediterranean region—geochronology**
*Quaternary:* Explosive volcanic activity in the Mediterranean over the past 200,000 yr as recorded in deep-sea sediments
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*tephrochronology:* Explosive volcanic activity in the Mediterranean over the past 200,000 yr as recorded in deep-sea sediments
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**melange** *see under* interpretation *under* structural analysis
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**metamorphic rocks** *see also* igneous rocks; metamorphism; metasomatism
**metamorphic rocks—age**
*absolute age:* Old Rb-Sr whole-rock isochron apparent ages from Lower Cambrian psammites and metapsammites, southeastern New York
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*complexes:* Uyak Complex, Kodiak Islands, Alaska; a Cretaceous subduction complex
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*age:* Older Guiana basement south of the Imataca Complex in Venezuela, and in Suriname
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**metamorphic rocks—lithostratigraphy**
*Mesozoic:* Evolution of part of the Nevadan Orogen in northwestern Mexico
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**metamorphic rocks—metaigneous rocks**
*geochemistry:* Anorthosite-mangerite relations on Baker Mountain, New York
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*mineral assemblages:* Textural and chemical variations of olivine and chrome spinel in the East Dover ultramafic bodies, South-central Vermont
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**metamorphic rocks—metaplutonic rocks**
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(Young, D. A.) 10: 1502-1514
*metagranite:* Petrology and regional significance of the Roxboro Metagranite, North Carolina
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**metamorphic rocks—metasedimentary rocks**
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(Holdaway, M. J.) 9: 1404-1414
*textures:* Cleavages in deformed psammitic rocks from southeastern Australia; their nature and origin
(Gray, D.) 4: 577-590
**metamorphic rocks—migmatites**
*genesis:* Genesis of the Skagit Gneiss migmatites, Washington, and the distinction between possible mechanisms of migmatization
(Yardley, B. W. D.) 6: 941-951
**metamorphic rocks—mineral assemblages**
*paragenesis:* Emplacement of the Ronda peridotite, Sierra Bermeja, Spain
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**metamorphic rocks—mylonites**
*textures:* Study of heterogeneous fabric and texture within a quartz-feldspar mylonite using the photometric method
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**metamorphic rocks—petrography**
*ophiolite:* Kings River Ophiolite, Southwest Sierra Nevada foothills, California
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*greenstone:* Deep-sea origin of Ordovician pillow basalt and associated sedimentary rocks, northern Nevada
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**metamorphic rocks—slates**
*petrofabrics:* Kink bands in the Somport slates, West-central Pyrenees, France and Spain
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*textures:* A chemical approach to the preferred orientation of mica
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— Evolution of slaty cleavage in relation to diagenesis and metamorphism; a study from the Hunsrueckschiefer
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**metamorphic rocks—textures**
*petrofabrics:* Penokean deformation and associated metamorphism in the western Marquette Range, northern Michigan
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*absolute age:* Precambrian basement at Molodezhnaya Station, East Antarctica
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*aureoles:* Papoose Flat Pluton; a granitic blister in the Inyo Mountains, California
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*P-T conditions:* Emplacement of the Ronda peridotite, Sierra Bermeja, Spain
(Lundeen, M.) 2: 172-180
**metamorphism—grade**
*low-grade metamorphism:* A chemical approach to the preferred orientation of mica
(Wintsch, R. P.) 12: 1715-1718
**metamorphism—mechanism**
*catazone:* Tectonic significance of petrofabric studies along the Chewack-Pasayten Fault, North-central Washington
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**metamorphism—P-T conditions**
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**metamorphism—regional metamorphism**
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*greenschist facies:* Evolution of part of the Nevadan Orogen in northwestern Mexico
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**metasomatic rocks—serpentinite**
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**metasomatism—materials**
*peridotite:* Jackstraw-textured talc-olivine rocks, Preston Peak area, Klamath Mountains, California
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**metasomatism—processes**
*hydrothermal alteration:* Multiple intrusion and hydrothermal activity, eastern Breckenridge mining district, Summit County, Colorado
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*serpentinization:* Textural and chemical variations of olivine and chrome spinel in the East Dover ultramafic bodies, South-central Vermont
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**Mexico** *see also* Gulf Coastal Plain; Gulf of California

**Mexico—petrology**
*volcanology:* Tertiary volcanism and caldera development near Durango City, Sierra Madre Occidental, Mexico
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**Mexico—sedimentary petrology**
*diagenesis:* Diagenesis in first-cycle desert alluvium of Cenozoic age, southwestern United States and northwestern Mexico
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**Mexico—stratigraphy**
*Tertiary:* Tertiary volcanism and caldera development near Durango City, Sierra Madre Occidental, Mexico
(Swanson, E. R., *et al.*) 7: 1000-1012

**Mexico—structural geology**
*orogeny:* Evolution of part of the Nevadan Orogen in northwestern Mexico
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**Michigan—structural geology**
*structural analysis:* Penokean deformation and associated metamorphism in the western Marquette Range, northern Michigan
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**mineral deposits, genesis—processes**
*igneous processes:* Multiple intrusion and hydrothermal activity, eastern Breckenridge mining district, Summit County, Colorado
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*sedimentary processes:* Early diagenetic, nonhydrothermal Na-alunite in Jurassic flint clays, Makhtesh Ramon, Israel
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**mineral deposits, genesis—uranium**
*source rocks:* Uranium abundances and distribution in associated glassy and crystalline rhyolites of the western United States
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**minerals** *see also* crystal chemistry; crystal growth

**minerals—carbonates**
*Ca-Mg-Fe carbonates:* A biogenic-chemical stratified lake model for the origin of oil shale of the Green River Formation; an alternative to the playa-lake model
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**minerals—crystal chemistry**
*chemical composition:* Textural and chemical variations of olivine and chrome spinel in the East Dover ultramafic bodies, South-central Vermont
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**minerals—framework silicates, feldspar group**
*feldspar:* Little Chief Granite porphyry; feldspar crystallization history
(McDowell, S. D.) 1: 33-49
*plagioclase:* Nucleation and growth of plagioclase, Makaopui and Alae lava lakes, Kilauea Volcano, Hawaii
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**minerals—orthosilicates, olivine group**
*olivine:* Interpretation of olivine zoning; study of a maar from the San Francisco volcanic field, Arizona
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**minerals—sheet silicates, clay minerals**
*occurrence:* Minerals in bottom sediments of the South China Sea
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**minerals—silicates**
*crystal chemistry:* Twin Sisters Dunite; petrology and mineral chemistry
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**minerals—sulfates**
*alunite:* Early diagenetic, nonhydrothermal Na-alunite in Jurassic flint clays, Makhtesh Ramon, Israel
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**Mississippi Valley—seismology**
*earthquakes:* New evidence on the history of the St. Francis Sunk Lands, northeastern Arkansas
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*Quaternary:* Ancestral Niagara River drainage; stratigraphic and paleontologic setting
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**Mollusca—Bivalvia**
*Quaternary:* Relict oysters on the United States Atlantic continental shelf; a reconsideration of their usefulness in understanding late Quaternary sea-level history
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**Montana—geochronology**
*Cretaceous:* Rb-Sr and U-Pb isotopic studies of the northeastern Idaho Batholith and border zone
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**Morocco—geochronology**
*Mesozoic:* Separation of Morocco and eastern North America; a Triassic-Liassic stratigraphic record
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**Morocco—geomorphology**
*changes of level:* Pliocene-Pleistocene emergence of the Moroccan Meseta
(Stearns, C. E.) 11: 1630-1644

**Morocco—stratigraphy**
*continental drift:* Separation of Morocco and eastern North America; a Triassic-Liassic stratigraphic record
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*Pliocene:* Pliocene-Pleistocene emergence of the Moroccan Meseta
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**Morocco—structural geology**
*tectonics:* Sedimentation and tectonic controls in the Early Jurassic central High Atlas trough, Morocco
(Lee, C. W., *et al.*) 8: 1199-1204

**mud volcanoes** *see also* volcanology

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**Nevada—petrology**
*lava:* Deep-sea origin of Ordovician pillow basalt and associated sedimentary rocks, northern Nevada
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**New Brunswick—structural geology**
*structural analysis:* Transected folds; a study illustrated with examples from Canada and Scotland
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**New England—petrology**
*intrusions:* Distribution, orientations, and ages of mafic dikes in central New England
(McHone, J. G.) 11: 1645-1655

**New Hampshire—petrology**
*intrusions:* Textural and structural modification history in the Red Hill layered syenitic complex, New Hampshire
(Size, W. B.) 9: 1424-1428

**New Jersey—petrology**
*metamorphic rocks:* Precambrian salic intrusive rocks of the Reading Prong
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**New Mexico—geochronology**
*absolute age:* New K-Ar dates and the late Pliocene to Holocene geomorphic history of the central Rio Grande region, New Mexico
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*Cenozoic:* New K-Ar dates and the late Pliocene to Holocene geomorphic history of the central Rio Grande region, New Mexico
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**New Mexico—geophysical surveys**
*gravity surveys:* Structure of the Rio Grande Rift in southern New Mexico and West Texas based on gravity interpretation
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*heat flow:* Terrestrial heat flow and crustal radioactiviy in northeastern New Mexico and southeastern Colorado
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*inclusions:* Ultramafic and mafic inclusions and megacrysts in Pliocene basalt, Black Range, New Mexico
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*metamorphic rocks:* Significance of chloritoid-bearing and staurolite-bearing rocks in the Picuris Range, New Mexico
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**New South Wales—petrology**
*lava:* Silicic lavas in Paleozoic flyschlike deposits in New South Wales, Australia; behavior of deep subaqueous silicic flows
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**New York—geochronology**
*Cambrian:* Old Rb-Sr whole-rock isochron apparent ages from Lower Cambrian psammites and metapsammites, southeastern New York
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*metamorphic rocks:* Anorthosite-mangerite relations on Baker Mountain, New York
(Seifert, K. E.) 2: 245-250
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**New York—stratigraphy**
*Ordovician:* Ordovician (Trenton to Richmond) depositional patterns of New York State, and their relation to the Taconic Orogeny
(Zerrahn, G. J.) 12: 1751-1760
*Quaternary:* Ancestral Niagara River drainage; stratigraphic and paleontologic setting
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*tectonics:* Ordovician (Trenton to Richmond) depositional patterns of New York State, and their relation to the Taconic Orogeny
(Zerrahn, G. J.) 12: 1751-1760

**New Zealand—geochronology**
*Holocene:* Time-space relationships between late Quaternary rhyolitic and andesitic volcanism in the southern Taupo volcanic zone, New Zealand
(Kohn, B. P., *et al.*) 8: 1265-1271

**New Zealand—seismology**
*earthquakes:* Seismotectonics of the Arthur's Pass region, South Island, New Zealand
(Rynn, J. M. W., *et al.*) 9: 1373-1388

**New Zealand—structural geology**
*tectonics:* Mesozoic tectonics, North Island, New Zealand
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*plate tectonics:* Mesozoic tectonics, North Island, New Zealand
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**Newfoundland—stratigraphy**
*Paleozoic:* A lower Paleozoic trench-fill sequence, New World Island, Newfoundland
(McKerrow, W. S., *et al.*) 8: 1121-1132

**Newfoundland—structural geology**
*tectonics:* Coastal Complex, western Newfoundland; an Early Ordovician oceanic fracture zone
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**Newfoundland—tectonophysics**
*plate tectonics:* Coastal Complex, western Newfoundland; an Early Ordovician oceanic fracture zone
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**Nigeria—geochronology**
*Cambrian:* Structural distinction between a metasedimentary cover and an underlying basement in the 600-m.y.-old Pan-African domain of northwestern Nigeria, West Africa
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*Cretaceous:* Mid-Cretaceous paleoenvironments and biostratigraphy of the Benue Trough, Nigeria
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*tectonics:* Structural distinction between a metasedimentary cover and an underlying basement in the 600-m.y.-old Pan-African domain of northwestern Nigeria, West Africa
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**nodules—manganese**
*distribution:* Separation of primary ice-rafted debris from lag deposits, utilizing manganese micronodule accumulation rates in abyssal sediments of the Southern Ocean
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**North America** *see also* Appalachians; Canada; Great Lakes region; Gulf Coastal Plain; Mexico; Rocky Mountains

**North America—structural geology**
*orogeny:* The Cordilleran orogenic belt between Nevada and Chihuahua
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**North America—tectonophysics**
*plate tectonics:* Seismic trends and travel-time residuals in eastern North America and their tectonic implications
(Fletcher, J. B., *et al.*) 11: 1656-1676

**North Carolina—geochronology**
*absolute age:* Petrochemical and geochronological studies of plutonic rocks in the southern Appalachians; III, Leucocratic adamellites of the Charlotte Belt near Salisbury, North Carolina
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*Paleozoic:* Petrochemical and geochronological studies of plutonic rocks in the southern Appalachians; III, Leucocratic adamellites of the Charlotte Belt near Salisbury, North Carolina
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*Quaternary:* Relict oysters on the United States Atlantic continental shelf; a reconsideration of their usefulness in understanding late Quaternary sea-level history
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**North Carolina—petrology**
*metamorphic rocks:* Petrology and regional significance of the Roxboro Metagranite, North Carolina
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**North Carolina—stratigraphy**
*changes of level:* Relict oysters on the United States Atlantic continental shelf; a reconsideration of their usefulness in understanding late Quaternary sea-level history
(Macintyre, I. G., *et al.*) 2: 277-282

**Northern Hemisphere** *see also* Africa; Atlantic Ocean; Europe; North America; Pacific Ocean; USSR

**Norway—structural geology**
*tectonics:* Caledonian nappe correlation and orogenic history in Scandinavia north of lat 67°N
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**ocean floors** *see also under* oceanography *under* Atlantic Ocean

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**oil shale** *see also under* economic geology *under* Colorado

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# ERRATA

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Page 19: third author's name, "Grone," should read "Crone".
April contents page, first column: "I. Glover III" should read "L. Glover III".
Pages 703, 706: Figures 4 and 6 are transposed. Caption for Figure 4 belongs with Figure 6 and vice versa.
September contents page, second column: "John M. W. Ryan" should read "John M. W. Rynn".

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